

# Ultraform® W 2320 003 PRO AT

## Polyoxymethylene (POM)



### Product Description

Ultraform W 2320 003 PRO AT is a very easy flowing and rapidly freezing injection molding POM grade. This grade was developed for the medical device market. This grade complies with US Pharmacopoeia: Biological Reactivity Tests, USP Plastic Class VI (USP VI), ISO 10993-5: Biological Evaluation of Medical Devices Part 5: Test for Cytotoxicity, DMF: A Drug Master File (DMF) has been registered at FDA for Ultraform® PRO and Food Contact: Ultraform® PRO is in compliance with multiple regional food contact regulations, especially for Europe and United States.

### Applications

Typical applications include functional parts in medical devices.

| PHYSICAL                                    | ISO Test Method | Property Value |
|---|-----------------|----------------|
| Density, g/cm <sup>3</sup>                  | 1183            | 1.41           |
| Mold Shrinkage, parallel, %                 | 294-4           | 2              |
| Mold Shrinkage, normal, %                   | 294-4           | 2.1            |
| Moisture, %                                 | 62              |                |
| (50% RH)                                    |                 | 0.2            |
| (Saturation)                                |                 | 0.8            |
| RHEOLOGICAL                                 | ISO Test Method | Property Value |
| Melt Volume Rate (190 C/2.16 Kg), cc/10min. | 1133            | 25             |
| MECHANICAL                                  | ISO Test Method | Property Value |
| Tensile Modulus, MPa                        | 527             |                |
| 23C   |                 | 2,850          |
| Tensile stress at yield, MPa                | 527             |                |
| 23C   |                 | 65             |
| Tensile strain at yield, %                  | 527             |                |
| 23C   |                 | 8              |
| Nominal strain at break, %                  | 527             |                |
| 23C   |                 | 24             |
| Tensile Creep Modulus (1000h), MPa          | 899             | 1,350          |
| IMPACT                                      | ISO Test Method | Property Value |
| Izod Notched Impact, kJ/m <sup>2</sup>      | 180             |                |
| -30C  |                 | 5              |
| 23C   |                 | 5              |
| Charpy Notched, kJ/m <sup>2</sup>           | 179             |                |
| -30C  |                 | 4              |
| 23C   |                 | 4.5            |
| Charpy Unnotched, kJ/m <sup>2</sup>         | 179             |                |
| -30C  |                 | 190            |
| 23C   |                 | 190            |
| THERMAL                                     | ISO Test Method | Property Value |
| Melting Point, C                            | 3146            | 166            |
| HDT A, C                                    | 75              | 100            |

Coef. of Linear Thermal Expansion, Parallel,  
mm/mm C

1.1 X10<sup>-4</sup>

| ELECTRICAL                      | ISO Test Method | Property Value |
|---------------------------------|-----------------|----------------|
| Comparative Tracking Index      | IEC 60112       | 600            |
| Volume Resistivity (Ohm-m)      | IEC 60093       | 1E11           |
| Surface Resistivity (Ohm)       | IEC 60093       | 1E13           |
| Dielectric Constant (1 MHz)     | IEC 60250       | 3.8            |
| Dissipation Factor (1 MHz), E-4 | IEC 60250       | 50             |

## Processing Guidelines

### Material Handling

Max. Water content: 0.15%

Product is supplied in polyethylene bags and drying prior to molding is not required. However, after relatively long storage or when handling material from previously opened containers, preliminary drying is recommended in order to remove any moisture which has been absorbed. If drying is required, a dehumidifying or desiccant dryer operating at 80 - 110C (176 - 230F) is recommended. Drying time is dependent on moisture level, however 2-4 hours is generally sufficient. Further information concerning safe handling procedures can be obtained from the Safety Data Sheet. Alternatively, please contact your BASF representative.

### Typical Profile

Melt Temperature 190-230C (375-446F)

Mold Temperature 60-120C (140-248F)

Injection and Packing Pressure 35-70 bar (500-1000psi)

### Mold Temperatures

A mold temperature of 60-120C (140-248F) is recommended, however temperatures of as low as 45C (113F) can be used where applicable.

### Pressures

Injection speed must be optimized. A filling rate which is too high results in anisotropic mechanical properties, while a filling rate which is too low yields parts with poor surface finish. The tool must be vented to avoid burn marks and prevent mold deposits. Injection pressure controls the filling of the part and should be applied for 90% of ram travel. Packing pressure affects the final part and can be used effectively in controlling sink marks and shrinkage. It should be applied and maintained until the gate area is completely frozen off.

Back pressure can be utilized to provide uniform melt consistency and reduce trapped air and gas.

### Fill Rate

Injection speed must be optimized. A filling rate which is too high results in anisotropic mechanical properties, while a filling rate which is too low yields parts with poor surface finish. The tool must be vented to avoid burn marks and prevent mold deposits.

## Note

Although all statements and information in this publication are believed to be accurate and reliable, they are presented gratis and for guidance only, and risks and liability for results obtained by use of the products or application of the suggestions described are assumed by the user. NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH. Statements or suggestions concerning possible use of the products are made without representation or warranty that any such use is free of patent infringement and are not recommendations to infringe any patent. The user should not assume that toxicity data and safety measures are indicated or that other measures may not be required.